

Mass Activity Calculator

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27 Cobalt

Current Chart: Karlsruhe

Element: Co Mass: 60 Mixture selector

Quantity: 1E+06 Unit: Activity (Bq) Convert

Convert to:	Quantity
Mass (g)	2.388e-8
Activity (Bq)	1.000e+6
Activity (Ci)	2.703e-5
Number of atoms	2.400e+14
Mole of atoms	3.985e-10
Gamma dose rate (µSv/h)	0.3370 at 100 cm distance (vacuum). Threshold energy (γ & X rays) = 15 keV
Committed Effective Dose Equivalent, e(50)inhalation (µSv)	3.100e+4
Committed Effective Dose Equivalent, e(50)ingestion (µSv)	3.400e+3
Isotopic Power α (Watt)	0
Isotopic Power α+β (Watt)	1.548e-8
Isotopic Power α+β+γ (Watt)	4.161e-7

Nucleonica's Mass Activity Calculator

The mass activity calculator is a popular tool for conversion between different physical quantities (e.g. mass, activity, number of atoms, etc.). A particularly useful feature is that in addition to single nuclide, the mass activity calculator can also be applied to nuclide mixtures. These nuclide mixtures can be created with the Nuclide Mixtures module. The *Convert to* box shows the full list of quantities. In addition to the standard list (mass, activities, etc.), conversions can also be made using:

- external and internal dosimetry quantities such as the gamma dose rate (where the distance is required)
- the committed effective doses for inhalation and ingestion.
- the amount of heat generated – isotopic power – through radioactive decay for α , $\alpha+\beta$, and $\alpha+\beta+\gamma$.

In the above example, the nuclide Co-60 is selected. A different nuclide can be selected from the element and mass drop-down menus. The default source strength is 1 MBq. In the *unit* drop-down menu, the source strength is shown in becquerel (Bq), curie (Ci), number of atoms, etc. The user can also select a previously defined nuclide mixture (by clicking on the *Mixture selector*). Further information is given in the Nucleonica wiki.

